

June 3, 2014

Detailed history of chilled water leak as follows:

- During optimization, noticed losing water by reading make-up water meter. Tank was not in use so it was a closed system. Water make-up should have been minimal. Calculated loss at 100 to 135 gallons per hour;
- Noticed water running underneath storm drain north of the Courthouse. Had Carl Erickson, Garratt Callahan, add traceable chemical into system so we could test chilled water. The test revealed it was chilled water;
- To determine which section of chilled water piping was leaking. Brandt isolated each section between vaults. The only section that did not hold pressure was the supply between vault 5 and the Courthouse. This is what determined that we try to locate a leak in that area;
- A sonar was brought onsite to try and locate the leak. Due to the depth of the piping, approximately 13', and it being insulated, they were unsuccessful in finding the leak;
- Brought in "pot hole" (vacuum) truck to try and reach pipe and locate any water around the pipes in various locations. At the north end by vault #5 as they were punching a hole, a large void was found, about 10' deep with water;
- Since a void of that size was discovered we knew there had to be a leak. Testing determined the presence of chilled water. Once the hole was excavated, a city main line crossing the chilled waterlines had a large amount of water coming from its trench line. We also noticed water entering the hole from the south end. Tested water and found that the water from the south was chilled water and the water in the city main was city water. These two water leaks created the void;
- Since chilled water was entering from the south it was decided to locate each seam of the welded pipe to check for leaks. Every 42' is a welded seam. In the second hole a small amount of water was detected but tested positive for chilled water;
- Hole #3 had a lot of water infiltration and tested high for chilled water chemical. After exposing the welded seams no leak was found;
- Hole #4 is where a 45 degree angle is welded to make the turn into the direction of the Courthouse. Due to utilities on top of the lines this took more time to locate and safely reach the pipes;
- When the 45's were uncovered large amounts of water was running into the hole from all directions. Every sample from every direction tested positive for chilled water. Due to the amount of water it was decided to introduce dye into the line. Then we could determine where the leak might be, depending on which hole it showed up in, #3 or #4. We knew it wasn't to the north because these holes had dried up as we moved south;
- Hole #4 turned pink in about 36 hours. Hole #3 did not turn pink. This showed us that the leak is between #4 and the Courthouse;

- There was one more seam between #4 and the wall. So we exposed it and found water still running in from the west (now the direction towards the Courthouse);
- Decided to bore concrete and use vacuum truck to locate pipe and possible water. This was unsuccessful due to pipe depth, 10' to 12';
- Decision was made to cut concrete between wall and another section that was excavated 3 ½ years ago prior to trying to find a leak. That section had no leaks evident 3 ½ years ago. We added dye again and it showed up in about 4 hours;
- We believe we are now at the source of the leak which is between the loading dock and block wall. It will need to be excavated around the chill water pipes and repaired. Then it will be tested, backfilled and concrete parking slab poured.